

Application Serial No. 10/813,538
Reply to office action of March 18, 2008

PATENT
Docket: CU-3660

REMARKS/ARGUMENTS

Reconsideration is respectfully requested.

Claims 1-21 are pending before this amendment having previously withdrawn claims 4-9, 17 and 18. By the present amendment, claims 11-12 are canceled without prejudice; claims 1, 10, 13 and 19 are amended. No new matter has been added.

In the office action (page 2), claims 1-3 and 19-21 stand rejected under 35 U.S.C. § 103(a) as being obvious over U.S. Pat. Appl. Publ. No. 2002/0093285 (Sugimoto) in view of U.S. Patent No. 6,541,591 (Olson). The "et al." suffix is omitted in a reference name.

The applicants respectfully disagree and submit that the claims, as they now stand, are in condition for allowance.

The examiner states in the office action (page 2, para. 4, lines 1-3) that "Sugimoto teaches EL devices comprising a silicon oxynitride film formed on a resin substrate. Although Sugimoto fails explicitly to teach the ranges recited in instant claim 1. However, where, as here, the prior art teaches the general conditions of a claimed invention, it is not inventive to discover optimum or workable ranges through routine experimentation."

Additionally, the examiner states in the office action (page 3, para. 5, lines 1-4) that "Sugimoto fails to teach that the substrate or the top surface of the layered body on which the protective coat is coated is selected from the group consisting of acrylic UV

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curable resins, polyethylene naphthalate and polyethersulfone, Sugimoto teaches that the substrates may be formed resins, such as polycarbonate (see paragraph [0031]). Olson teaches that polyethylene naphthalate is a functional equivalent of polycarbonate as a base layer".

However, as pointed out in the present specification in paragraphs [0009] - [0014], Sugimoto at most only discusses the barrier properties of the silicon oxynitride film only in terms of the O/N ratio which is an uncertain factor regarding the quality thereof. Further, in Sugimoto, the silicon oxynitride film is formed using oxygen as an introduced gas for a SiN target, and this results in unacceptable variations in the quality of the resultant silicon oxynitride film which makes it difficult to obtain the desired composition.

Further, as pointed out in the present specification at paragraphs [0038] - [0040], the composition ratio of silicon oxynitride film, Si/O/N is quite important for the barrier property thereof and is firstly found by the applicants of this application.

Since Sugimoto does not disclose, teach or even hint at the claimed composition ratio of Si to O and N, then the claimed subject matter of claims 1 - 3 could not be determined through routine experimentation by a person skilled in the art.

Further, in the previous official action of 06/14/2007, the examiner stated at page 4, para. 7, lines 3-6 that "[r]egarding these comparative examples, they appear not to be a comparison with Sugimoto and accordingly are not persuasive. The specification discloses that comparative examples 1 and 2 were carried out under conditions 'close

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to' those of Sugimoto (see specification at pages 31 and 32). Thus, the proffered evidence is not a comparison with Sugimoto."

The applicants respectfully disagree. The reason why the comparative examples 1 and 2 are "close to" Sugimoto is that the production conditions of Sugimoto are not disclosed in any great detail. With respect to the N/O ratios which are disclosed in Sugimoto, the N/O ratios in the comparative examples 1 and 2 perfectly agree to those of Sugimoto. Further, although the substrate used in the comparative examples 1 and 2 is polyethersulfone is different from the polycarbonate used in Sugimoto, the polyethersulfone is our claimed substrate and the polycarbonate is not our claimed substrate. Therefore, we consider that this change is essential for the comparison between the protective film of this invention and the protective film of Sugimoto, on the claimed substrate. Thus, we consider that the proffered evidence can be a valid comparison with Sugimoto.

Further, in the present specification at page 15, line 5-12, the applicants disclose that "the present inventers attempted to produce a protective coat under the conditions disclosed in the above US2002/093285A1 ——. However, a SiOxNy film as described in US2002093285A1 could not be obtained as the result, and a SiOx-formed film was obtained instead." That is, the applicants respectfully assert that the disclosure of Sugimoto is non-enabling because a person skilled in the art would not be able to replicate the alleged findings of Sugimoto without implementing undue experimentation.

Thus, Sugimoto does not disclose and not teach an enabled composition ratio of Si to O and N, and therefore the subject matter of claims 1 - 3 could not be determined

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by a person skilled in the art when using routine experimentation to replicate the alleged teachings of Sugimoto. Thus, the applicants respectfully submit that the subject matter of claims 1 - 3 are not rendered as obvious over Sugimoto in view of Olson.

Similarly, the applicants respectfully submit that the subject matter of Claims 19 - 21 are not rendered as obvious over Sugimoto in view of Olson.

Therefore the examiner is respectfully requested to withdraw this obviousness rejection to the presently claimed invention.

In the office action (page 3), claims 1-3, 10-16 and 19-21 stand rejected under 35 U.S.C. § 103(a) as being obvious over U.S. Pat. Appl. Publ. No. 2002/0043929 (Tazawa) in view of U.S. Patent No. 6,541,591 (Olson).

The applicants respectfully disagree and submit that the claims, as they now stand, are in condition for allowance.

The examiner states in the office action starting at page 3, paragraph 8 that "Tazawa teaches EL devices comprising first and second layers formed on a resin substrate (abstract). The layers may be formed of such materials as silicon oxide, silicon nitride and silicon oxynitride (see paragraph [0057]-[0059]). Moreover Tazawa teaches that the materials of one layer, e. g., SiON, is a functional equivalent of components of other layers, e. g., alumina (id.). Therefore, it would have been obvious to employ the presently claimed materials in the structure of Tazawa, since Tazawa suggests the use of such materials."

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However, the applicants respectfully assert that Tazawa does not disclose or teach the composition ratio of Si to O and N, and there is no concrete example for formation of SiON. As mentioned above, a person skilled in the art cannot be determined the subject matter of claims 1 - 3, 19-21 by using routine experimentation.

Regarding Claims 10-16, indeed, in Tazawa, two or more layers are formed on the plastic substrate. The most relative disclosed layered structure in Tazawa comprises a gas barrier layer 3(SiO_x, Al₂O₃, SiO_N), a top coat layer 2(TiO₂), heat radiation layer 4 (Ag, Au, Al, SiC, BeO, AlN, Al₂O₃), insulating layer 5 (SiO_x, Al₃N₄, Al₂O₃) formed on the plastic substrate, in this order (See e.g., paragraphs [0057]-[0059], [0061] and [0067]).

However, in Tazawa, there is no hint of an idea for the combination of the first layer made of a silicon oxide film and the second layer made of a silicon nitride oxide film or a silicon nitride film as required in amended Claim 10. Further, there is no hint of an idea that the two protective layers are formed on the top surface of a substrate, or on the top surface of a thin film layered body formed on the substrate so that a first layer is thin and a second layer is thick.

The examiner states in the office action at page 3, paragraph 8 that "Tazawa teaches that materials of one layer, e.g., SiON, is a functional equivalent of components of other layers, e.g. alumina." However, the applicants respectfully disagree and submit that such descriptions or teaching in Tazawa do not exist. In fact, the word "SiO_N" only appears once in Tazawa. Furthermore, although alumina may be used as various layers taught by Tazawa, i.e., gas barrier layer 3, heat radiation layer 4, insulating layer

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5, SiON is only mentioned as a gas barrier layer 3 which corresponds with the first layer of the present invention. Thus, the applicants respectfully assert that the examiner's insistence regarding this point is unreasonable.

As required in amended Claim 10, in this invention, the first layer is a silicon oxide film and the second layer is a silicon nitride oxide film or a silicon nitride film, and wherein the first layer has a thickness of 200A - 1500A, and the second layer has a thickness of 1500A - 3000A.

Although in Tazawa, the thickness of the respective layers are not particularly limited, but in the example in Tazawa, there is a description that the thickness of the gas barrier layer 3 (corresponding to the first layer of this invention) is 5 μ m, namely, 50000A. As compared with the thickness of the first layer of this invention, the thickness of the gas barrier layer 3 of Tazawa is significantly larger. Thus, the layered construction of Tazawa is quite different from the two layered protective film of this invention.

Thus, the subject matter of claims 10-16 of this application is not rendered obvious from Tazawa and Olson.

For the reasons set forth above, the applicants respectfully submit that claims 1-3, 10, 13-16 and 19-21, now pending in this application, are in condition for allowance over the cited references. Accordingly, the applicants respectfully request reconsideration and withdrawal of the outstanding rejections and earnestly solicit an indication of allowable subject matter.

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When all pending elected claims are found to be allowable, the examiner is authorized to cancel all withdrawn claims, if any, via an examiner's amendment and issue a Notice of Allowance. The applicants reserve the right to present the cancelled withdrawn claims in a divisional application.

This amendment is considered to be responsive to all points raised in the office action. Should the examiner have any remaining questions or concerns, the examiner is encouraged to contact the undersigned attorney by telephone to expeditiously resolve such concerns.

Respectfully submitted,

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